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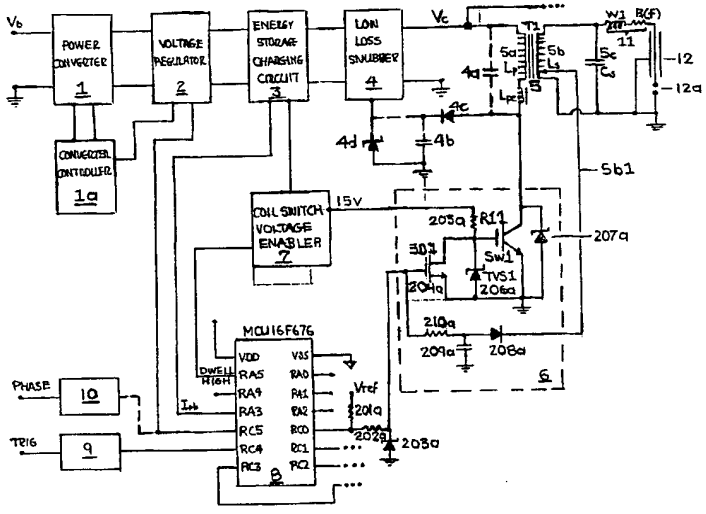
(54) Title: IMPROVED MCU BASED HIGH ENERGY IGNITION



(57) Abstract: A high energy inductive coil-per-plug ignition system operating at a higher voltage Vc than battery voltage Vb by use of boost-type power converter (1), using high energy density low inductance coils Ti which are further improved by partial encapsulation of the coils and by use of biasing magnets (120) in the large air gaps in the core to increase coil energy density, the coils connected to capacitive type spark plugs, with improved halo-disc type firing ends, by means of improved suppression wire (78), the system operated and controlled by a micro-controller (8) to generate and control the coil charge time Tch, the sequencing the spark firing, and other control features including finding the firing cylinder by simultaneous ignition firing and sensing during engine cranking, to provide a highly controlled and versatile ignition system capable of producing high energy flow-coupling ignition sparks with relatively fewer and smaller parts.

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